Maricopa County
Air Quality Department

NON-TITLE V
TECHNICAL SUPPORT DOCUMENT

PERMIT NUMBER:	000184	**App. ID(s):**	407837
BUSINESS NAME:	JBS Tolleson, Inc.	**Revision(s):**	3.0.0.0
SOURCE TYPE:	Rendering Plant	**Revision Type(s):**	Minor Mod
PERMIT ENGINEER:	LiSa Kon	**Date Prepared:**	07/05/2016

BACT: No **MACT:** No **NSPS:** Yes **SYNTH MINOR:** No **AIRS:** No

DUST PLAN REQUIRED: Yes **DUST PLAN RECEIVED:** Yes [on Sharepoint]

O&M PLAN REQUIRED: Yes **O&M PLAN RECEIVED:** Yes

PORTABLE SOURCE: No **SITE VISIT: Yes [3/29/2016]**

PROCESS DESCRIPTION:

JBS (formerly Sunland Beef) slaughters and renders beef. In the rendering process, inedible body parts, bones and organs (collectively known as offal) are ground in a pre-breaker and fed to a rendering cooker. When the batch is discharged from the cooker, liquids are removed from the cooked mass by a percolation screen followed by a series of presses. The separated tallow solution is polished via centrifuging and is pumped to heated storage tanks for shipment or as use in the boilers as a back-up fuel. The remaining meat meal is ground in a mill and conveyed by auger to storage bins for shipment. Non-condensible fumes from the cookers are incinerated in one of two Superior boilers. Alternatively, the non-condensible fumes can be treated with the general room air of the rendering facility in a packed bed scrubber. Cattle blood is similarly rendered using a dryer to create blood meal. Fumes from this process are treated in a packed bed scrubber

PERMIT HISTORY:

Date Received	Revision Number	Description
1968	-	Started operating the rendering plant at their current location in Tolleson.
1986	0.0.0.0	Submitted application for new permit for the rendering plant (Permit #8600952).
09/1994		Submitted application for a minor permit revision to rebuild the rendering process plant, including air emission control equipment.
02/14/1995	0.0.0.0	Submitted application for the renewal of Permit #8600952 (new permit #950035). In the application, the Permittee requested that one 64 MMBtu/hr boiler and the blood dryer be allowed to burn #2 distillate oil as an emergency fuel.
02/29/1996	0.0.1.0	Submitted application for a minor permit revision to replace a steam boiler and install a bone dryer. It was determined by the department that the proposed changes warranted a non-minor permit revision.
07/31/1996	0.1.0.0	Submitted application for a non-minor permit revision (ID #96-018) to add a bone dryer and ancillary emission control equipment.
02/09/1998	0.1.1.0	Submitted application for a minor revision to decommission an existing Zurn steam generating boiler and replace it with a Continental steam generating boiler.
07/11/2000	0.0.0.0	Submitted application for the renewal of permit #950035 (ID #115280).
05/11/2001	0.1.0.0	Submitted application for a non-minor permit revision (ID #143429) to allow the use of tallow as fuel for the Superior boilers.
12/11/2001	0.0.1.0	Submitted application for a minor permit revision (ID #160508) to remove a Cyclotherm boiler, switch fume incineration device to Continental boiler, and replace time restriction with a fuel limitation on boiler operation.

Date Received	Revision Number	Description
03/13/2002	0.0.2.0	Submitted application for a minor permit revision (ID #168184) to remove the Gel-Bone and Blood Drying Operations, increase rendering production rates, and incorporate new test results to the permit.
06/05/2002	0.0.3.0	Submitted application for a minor permit revision (ID #175732) to install a new rendering cooker, Dupps 320U.
04/20/2004	0.1.1.0	Submitted application for a minor permit revision (ID #244667) to install a blood drying system and two Kewanee boilers.
11/22/2004	0.2.0.0	Submitted application for a non-minor permit revision (ID #269776) to burn tallow and #2 fuel oil in the Kewanee boilers. It was later combined with the renewal permit.
01/10/2006	1.0.0.0	Submitted application for a permit renewal (ID #302129).
05/24/2006	1.0.1.0	Submitted application for a minor permit revision (ID #336958) to increase the production of the blood drying system.
10/24/2008	-	Submitted letter requesting that the permit be transferred from Sunland Beef to JBS Tolleson due to ownership change.
12/03/2009	1.1.0.0	Submitted application for a non-minor permit revision (ID #382973) to replace the burners in the Superior and Kewanee boilers and allow them to burn tallow or fuel oil in addition to natural gas. It was withdrawn 5/5/2010 after receiving word from the Department that the BACT analysis was not sufficient.
04/05/2011	2.0.0.0	Submitted application for a permit renewal (ID #384565). Rev 2.0.0.0 and Rev 2.1.0.0 were processed simultaneously. Issued on 05/07/2012
07/25/2011	2.0.1.0	Submitted application for a minor permit revision (ID #389969) to burn tallow and #2 fuel oil in the Superior boilers and build anaerobic digester to treat wastewater. The minor modification was denied since the requested changes required a non-minor modification.
09/26/2011	2.1.0.0	Submitted application for a non-minor permit revision (ID #389969) to burn tallow and #2 fuel oil in the Superior boilers and build an anaerobic digester to treat wastewater. Digester gas created from the wastewater treatment plant will either be used as fuel in the Superior boilers or burned in a flare. Greenhouse gas emissions were also calculated to determine if the facility will be Title V under the Greenhouse Gas Tailoring Rule.
06/21/2002	2.1.1.0	Submitted application for a minor permit revision (ID #393350) to replace the existing [the blood dryer (RN-13)] 13.5 MMBtu/hr blood dryer with a smaller dryer rated at 8.7 MMBtu/hr. Issued: 08/24/12.
04/28/2016	2.1.2.0	MCAQD received permit minor modification. See Purpose for Application. 1. One of the requests in the non-minor modification application that was submitted to MCAQD in 09/26/2011 was to request for an approval to build an anaerobic digester to treat wastewater at the permitted site. The Permittee had planned on using the digester gas created from the wastewater treatment plant be used as fuel in the Superior boilers or burned in the flare. Unfortunately City of Tolleson had turned down JBS's request for the construction of an anaerobic digester to treat wastewater on site. As such, the Permittee is requesting for all conditions associated with the 17.90 MMBtu/hr digester gas flare (for biogas destruction) to be removed from the permit conditions as the equipment was never installed. There will be no digester gas produced at the facility. As none of the boilers at the facility will be burning digester gas, the Permittee is requesting for all requirements associated with digester gas and flare to be removed from the permit conditions. Permit conditions in Rev 2.0.1.0 will be revised by eliminating emission factors for burning digester gas in the boilers, digester gas will no longer be a fuel option, and requirements for sulfur testing of digester gas will also be removed.

Date Received	Revision Number	Description
		2. To inform the Department that the facility has: i. Installed two, natural gas powered air make-up units. Each unit is rated at 2.7 MMBtu/hr and ii. Replaced the two units of Zep parts cleaners to a single Safety Kleen, Model 30. Spent solvent is recycled (hauled offsite for disposal) by Safety Kleen when fresh solvent is delivered. See Worksheet 1 in Appendix A for emissions calculation on the air make-up units. Note: Permit Revision 2.1.2.0 will not have a facility wide daily emission limits in the permit conditions because the revised Rule 241 which was adopted on 02/03/2016 no longer stipulates allowable daily emission limits on criteria pollutants.
01/05/2016	3.0.0.0	MCAQD received permit renewal application.

PURPOSE FOR APPLICATION:
Permit renewal

A. APPLICABLE COUNTY REGULATIONS:

Rule 100: General Provisions and Definitions
Rule 200: Permit Requirements
Rule 220: Non-Title V Permit Provisions
Rule 280: Fees: Table A (Rendering)
Rule 300: Visible Emissions
Rule 310: Fugitive Dust Sources
Rule 311: Particulate Matter from Process Industries
Rule 320: Odors and Gaseous Air Contaminants
Rule 323: Fuel Burning Equipment from Industrial/Commercial/Intuitional (ICI) Sources
Rule 330: Volatile Organic Compounds
Rule 331: Solvent Cleaning
Rule 360: New Source Performance Standards

NON-APPLICABLE COUNTY REGULATIONS:

Rule 310.01 does not apply to livestock activities at this facility since the operation does not meet the definition of "Non-traditional Source of Fugitive Dust" provided in Rule 310.01 §218. In order to meet the definition, the facility must not require any air quality permit under MCAQD rules, including a Non-Title V permit.

Although organic liquid in the form of tallow is stored and transferred from the facility, Rules 350 and 351 only apply to bulk plants and terminals in which the organic liquid is received from delivery vessels. JBS actually produces tallow on-site rather than having it delivered to the facility.

B. MINOR NEW SOURCE REVIEW:

Not applicable. There is no change in emissions from the last permit revision (Rev 2.1.2.0)

C. FEDERAL REGULATIONS:

1. 40 CFR 60 Subpart Dc (Standards of Performance for Small ICI Steam Generating Units) applies to the Kewanee and Superior boilers while burning natural gas and/or distillate oil. Digester gas and

tallow are not identified in this rule and do not meet the definitions of natural gas or oil, Per 40 CFR 60.41(c).

2. Non-Applicable Federal Regulations**:**

- MACT JJJJJJ (National Emission Standards for Industrial, Commercial, and Institutional Boilers Area Sources) does not apply to this facility, per 40 CFR 63.11195(e) since the boilers meet the definition of "gas-fired boiler" provided in 40 CFR 60.11200. This definition includes boilers that burn gaseous fuels, including biogas, and that only burn liquid fuels during gas curtailment and for periodic testing not exceeding 48 hours per year. The Permittee stated in an e-mail 11/17/11 that liquid fuel (ie: beef tallow) will only be used during gas curtailment and for testing purposes.

- 40 CFR 60 Subpart Kb (Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984) does not apply to the tallow tanks, per 40 CFR 60.110b(d), since the vapor pressure is less than 15 kPa (see TSD for Revision 2.1.0.0).

D. AIR POLLUTION CONTROL EQUIPMENT/EMISSION CONTROL SYSTEM(s):

System description	Quantity	Comments:
Superior Boilers (SN001, SN002)	2	Incinerate odorous vapors from the cookers and digester gas from the proposed wastewater treatment plant. 06/23/2016 Approved O&M plan: Logged on Sharepoint. Pending receipt of a revised O&M Plan since the facility does not produce digester gas and the boilers will not be using any type of waste derived gas as fuel in the boilers.
Venturi scrubbers (R-14, R-002, R-010)	3	Control exhaust from cookers and blood dryer. Approved O&M plan: Logged on Sharepoint.
Condensers (R-008)	1	Condenses water entrained in the cooker exhaust. Approved O&M plan: Logged on Sharepoint.
Packed bed water scrubber	1	Controls rendering plant room air and blood dryer exhaust. Approved O&M plan: Logged on Sharepoint.
Dust Control Plan		On file (Sharepoint). Approved.

E. EMISSIONS:

Emissions from each piece of fuel burning equipment as shown in Table E-1 are determined by multiplying the monthly fuel usage by the appropriate factors in Permit Condition 2 (also as shown in Table E-2).

Equipment ID	**Heat input rating Btu/hr**	**Number of units**	**Choices of fuel type**
Superior Boiler 1	64,000,000	1	Natural gas, tallow, diesel
Superior Boiler 2	64,000,000	1	Natural gas, tallow, diesel
Kewanee Boiler 1 SN05	31,500,000	1	Natural gas, tallow, diesel
Kewanee Boiler 2 SN06	31,000,000	1	Natural gas, tallow, diesel
Duske Dryer	13,500,000	1	Natural gas
Make-up Air Unit	2,700,000	2	Natural gas

Emissions from rendering and miscellaneous operations such as solvent cleaning remains unchanged from the previous revision The table below shows the facility wide allowable emissions.

Table E-2

			Emission Factors (lbs/unit)					Sources of Emission factors
Equipment ID	**Fuel Type**	**Units**	**CO**	**NOx**	**PM10**	**VOC**	**SOx**	
Superior Boiler 1	Natural gas	MM scf	0.3	101	7.6	0.3	0.6	Source: AP-42 Tables 1.4-1,2
	Tallow	1000 gals	1.5	15	1.8	0.19	0.25	See Worksheet Tallow EF in the attached Excel file
	Diesel	1000 gals	5	20	3.3	0.2	7.2	Source: AP-42 Tables 1.3-1,3
Superior Boiler 2	Natural gas	MM scf	0.3	92	7.6	0.6	0.6	Source: AP-42 Tables 1.4-1,2
	Tallow	1000 gals	1.5	15	1.8	0.19	0.25	See Worksheet Tallow EF in the attached Excel file
	Diesel	1000 gals	5	20	3.3	0.2	7.2	Source: AP-42 Tables 1.3-1,3
Kewanee Boiler 1	Natural gas	lbs/MM scf	84	32	7.6	5.5	0.6	Source: AP-42 Tables 1.4-1,2
SN05	Tallow	1000 gals	0.003	6.3	2.4	0.05	0.9	See Worksheet Tallow EF in the attached Excel file
	Diesel	1000 gals	5	10	3.3	0.2	7.2	Source: AP-42 Tables 1.3-1,3
Kewanee Boiler 2	Natural gas	MM scf	84	32	7.6	5.5	0.6	Source: AP-42 Tables 1.4-1,2
SN06	Tallow	1000 gals	0.08	4.4	1.5	0.04	0.9	See Worksheet Tallow EF in the attached Excel file
	Diesel	1000 gals	5	10	3.3	0.2	7.2	Source: AP-42 Tables 1.3-1,3
Duske Dryer	Natural gas	MM scf	84	100	7.6	5.5	0.6	Source: AP-42 Tables 1.4-1,2
Make-up Air Units	Natural gas	lbs/MM scf	84	100	7.6	5.5	0.6	Source: AP-42 Tables 1.4-1,2

Note: the Kewanee boilers are equipped with low-NOx burners and FGR. The Superior boilers are not equipped with low NOx burners

Calcs for Rev 3.0.0.0.xlsx

Facility wide allowable emissions will remain the same as in Rev 2..2.0.

		1 ton	2000	lbs		
	Rev 2.1.1.0					
Pollutants	Twelve Month Rolling Total Emission Limits	Emissions from the addition of 2 Air Make-up Units in Minor mod 2.1.2.0	Facility Wide Allowable Emissions in Rev 2.1.2.0 and Rev 3.0.0.0		Public Notice Threshold Per Rule 100 §200.98	
	lbs	lbs	lbs/yr	tpy	tpy	
Carbon Monoxide (CO)	34,000	3,974	37,974	19	50	The renewal will have to go through public notice since the allowable emissions for NOx, PM 10 & 2.5 are above the public notice threshold per Rule 100
Nitrogen Oxide (NOx)	68,000	4,730	72,730	36	25	
Particulate Matter <10 Micron Diameter (PM10)	18,000	360	18,360	9	7.5	
Particulate Matter <2.5 Micron Diameter (PM2.5)	18,000	360	18,360	9	2.5	
Volatile Organic Compounds (VOC)	41,000	260	41,260	21	25	
Sulfur Oxides (SOx)	22,000	28	22,028	11	25	

F. HAP EMISSION IMPACTS:

Based on the information provided in the permit application, the facility emits insignificant amount of HAPs; therefore, SCREEN modeling was not performed per the Department's HAPs policy.

G. PERFORMANCE TESTING:

The facility does not have any equipment that requires performance test to be conducted.

H. REGULATORY REQUIREMENTS AND MONITORING:

Refer to Revision 3.0.0.0.

Appendix A

Worksheet 1

Natural Gas Fuel Burning Equipment Calculation Worksheet (Small Boiler < 100 MMBtu/hr)

Company: JBS Tolleson, Inc.
Permit: 000184 Rev 2.1.2.0

Input rating of equipment, Btu/hr

1)	2,700,000	Btu/hr
2)	2,700,000	Btu/hr
Totals	5,400,000	Btu/hr

Emission factors (AP-42 Chapter 1.4: Natural Gas Combustion)
Table 1.4-1: Emission factors for nitrogen oxides (NOx) and carbon monoxide (CO) from natural gas combustion
Table 1.4-2: Emission factors for criteria pollutants and greenhouse gases from natural gas combustion

			Constants	
CO:	84	lb/1E6 ft3		
NOx:	100	lb/1E6 ft3	0.001	ft3/Btu for Natural Gas
SOx	0.6	lb/1E6 ft3	24	hr/day
PM10:	7.6	lb/1E6 ft3	365	day/yr
VOC:	5.5	lb/1E6 ft3		

Emissions

	Annual Emissions[b]	
CO:	**3,974**	**lbs/yr**
NOx:	**4,730**	**lbs/yr**
SOx	**28**	**lbs/yr**
PM10:	**360**	**lbs/yr**
VOC:	**260**	**lbs/yr**

NOTES:
[a] Based on 24 hours per day for each piece of equipment.
[b] Based on 24 hours a day, 365 days a year.

Items 1-15 Front page: Items 1 to 15 (14 for Renewals) must be completed.

Notes to engineer:

- *For renewal applications the source must either answer 'No' to questions 2-5 or submit an application for a permit modification.*
- *Item 8: Many applicants do not know the SIC code or NAICS code for their industry. For a new application the code can be obtained by doing an on-line search. http://www.osha.gov/pls/imis/sicsearch.html*
- *Items 5, 7 and 14: These may be the same for many applicants.*

Complete: [y] Incomplete: [ ]

Item 16: A simple site diagram has been included, preferably on a standard size paper. Detailed blueprints or construction drawings are not required.

Complete: [ ] Incomplete: [ ] N/A: [x]

Item 17: A simple process flow diagram on a standard size paper is preferred. A process flow diagram may not be needed for some small businesses.

Complete: [ ] Incomplete: [ ] N/A: [x]

Item 18: An O&M plan is required only for a control device. An O&M plan is not required for a spray booth. Instead of including the O&M plan with the application, an applicant may submit it after receiving the permit.

Complete: [y] Incomplete: [ ] N/A: [ ]

Item 19: A dust control plan, if required, must accompany the permit application. The plan will be reviewed and approved by the dust compliance group.

Complete: [y] Incomplete: [ ] N/A: [ ]

Item 20: The applicant needs to complete only those sections of the permit application that are applicable.

Complete: [y] Incomplete: [ ] N/A: [ ]

Notes to engineer:

- *Concerning Section Z: Many applicants will not be able to perform these engineering calculations. We will accept the permit application with a blank Section Z.*

Instructions for completing Sections A, B, C, D, E-1, E-2, F, G, H, I, J, K-1, K-2, K-3, K-4, L, M, X-1, X-2, Y and Z of the permit application are included at the beginning of each section and are self-explanatory.

In general, a material safety data sheet (MSDS) is required for each chemical used, stored or processed at the facility. Exceptions are for very common materials, such as gasoline, diesel, acetone, etc.

Business name: **JBS Tolleson Inc**

Permit number: **000184 Rev 3.0.0.0**

Completeness review completed.
Application determined to be: Complete: [y] Incomplete: [ ]

Permit Engineer: **LiSa Kon** Date: **07/08/2016**